FACULTY OF ENGINEERING

DEPARTMENT OF TEXTILE ENGINEERING

A Report on
Industrial Attachment at Hamid Fabrics Ltd

Duration: September 16, 2014 to November 10, 2014

Course Code: TE 418 Course Title: Industrial Attachment

Submitted By:

Md. Ashraful Amin

ID : 111-23-2399

Supervised by:

Tanvir Ahmed Chowdhury

Senior Lecturer

A report submitted in partial fulfillment of the requirement for the **Degree of Bachelor of Science in Textile Engineering**

Advance in Textile Wet Processing

Fall, 2014

Declaration

I hereby declare that the work which is being presented in this report entitled, **"Industrial Attachment at Hamid Fabrics Ltd."** is original work of my own, has not been presented for a degree of any other university and all the resources of collected information for this report have been duly acknowledged.

_____ Md. Ashraful Amin

ID: 111-23-2399

This is to certify that the above declaration made by the candidate is correct to the best of my knowledge.

_____

Tanvir Ahmed Chowdhury
Senior Lecturer
Dept.of Textile Engineering
Daffodil International University

Supervisor

Acknowledgement

At first my gratefulness goes to Almighty Allah to give me strength and ability to complete the industrial training and this report. May your name be exalted, honored and glorified.
Industrial Attachment Course is an academic function of the Daffodil International University. I am highly delighted to express our regards & gratitude to honorable Head Prof. Dr. MahbubulHaque for providing us the chance to complete our Industrial Training in Hamid Fabrics Ltd
Special thanks to my supervising teacher, Tanvir Ahmed Chowdhury to whom I am extremely indebted for his tremendous support and guidance throughout my training period, without whose help it would not have been possible to complete the training successfully.
I also take the opportunity to express my sincerest gratitude to the management, administration & personnel of Hamid Fabrics Ltd for their kind assistance. Heartfelt thanks goes to Abdullah Al Mahmud , Managing Director , Mr. K.K Ghose, GM for their permission & excellent cooperation during training period. The generous support is greatly appreciated. My gratitude also goes to all the employees of Hamid Fabrics Ltd. for their sincere co-operation, support and valuable advices.

Finally, I would like to acknowledge that I remain responsible for the inadequacies & errors, which doubtless remain in the following report.

Table Of Content

Chapter -1 : Executive Summery

The term “textile” derived from the Latin textilis and the French texere, meaning “to weave,” and it originally referred only to woven fabrics. It has, however, come to include fabrics produced by other methods. Thus, threads, cords, ropes, braids, lace, embroidery, nets, and fabrics made by weaving, knitting, bonding, felting, or tufting are textiles. Textile technology education is based on industrial ground. Theoretical background is not sufficient so, industrial training is an essential part of study to make a technologist technically sound in this field. Industrial training provides us that opportunity to gather practical knowledge. Without practical knowledge it is not possible to apply the theoretical knowledge in the practical industrial field. Therefore, the industrial attachment is the process, which builds understanding, skills and attitude of the performer, which improves his knowledge in boosting productivity and services. This industrial training minimizes the gap between theoretical and practical knowledge and make us accustomed to industrial environment.

Industrial attachment helps us to familiar with technical support of modern machinery. It also provides us sufficient practical knowledge about production management, efficiency, industrial management, purchasing, utility, maintenance of machinery, their operation techniques etc. The above mentioned factors cannot be achieved successfully by means of theoretical knowledge only. This is why it should be accomplished with practical knowledge in which it is based on. Industrial training minimizes the gap between theoretical and practical knowledge and makes us accustomed to industrial environment.

At Hamid Fabrics Ltd, cutting-edge technologies merge seamlessly with human ingenuity to ensure excellence in every stage and area of their activities. Hamid Fabrics Ltd. has the capability to offer a wide product range for the export textile markets. The goal of the company is to become the preferred partner for sourcing high quality fabrics and clothing from Bangladesh With highly advanced technology and an emphasis on developing local human resources. Hamid Fabrics Ltd has the potential to make an important contribution to the nation's growing ready-made garments export sector.

Chapter -2 : Information About The Company

2.1. Company Profile

Name Of The Company :Mahin Group

Address :

Office: Hamid Tower (5th& 6th Floor) , 24 , Gulshan C/A Circle-2 , Dhaka 1212

Factory :Shilmandi , Narshingdi , Dhaka Division , Bangladesh

Website :www.mahingroup.com

Type of The Company : Private Limited Company

Type Of Business : 1. Fabrics
2. Apparel
3. Insurance
4. Real Estate

Total Land Area :

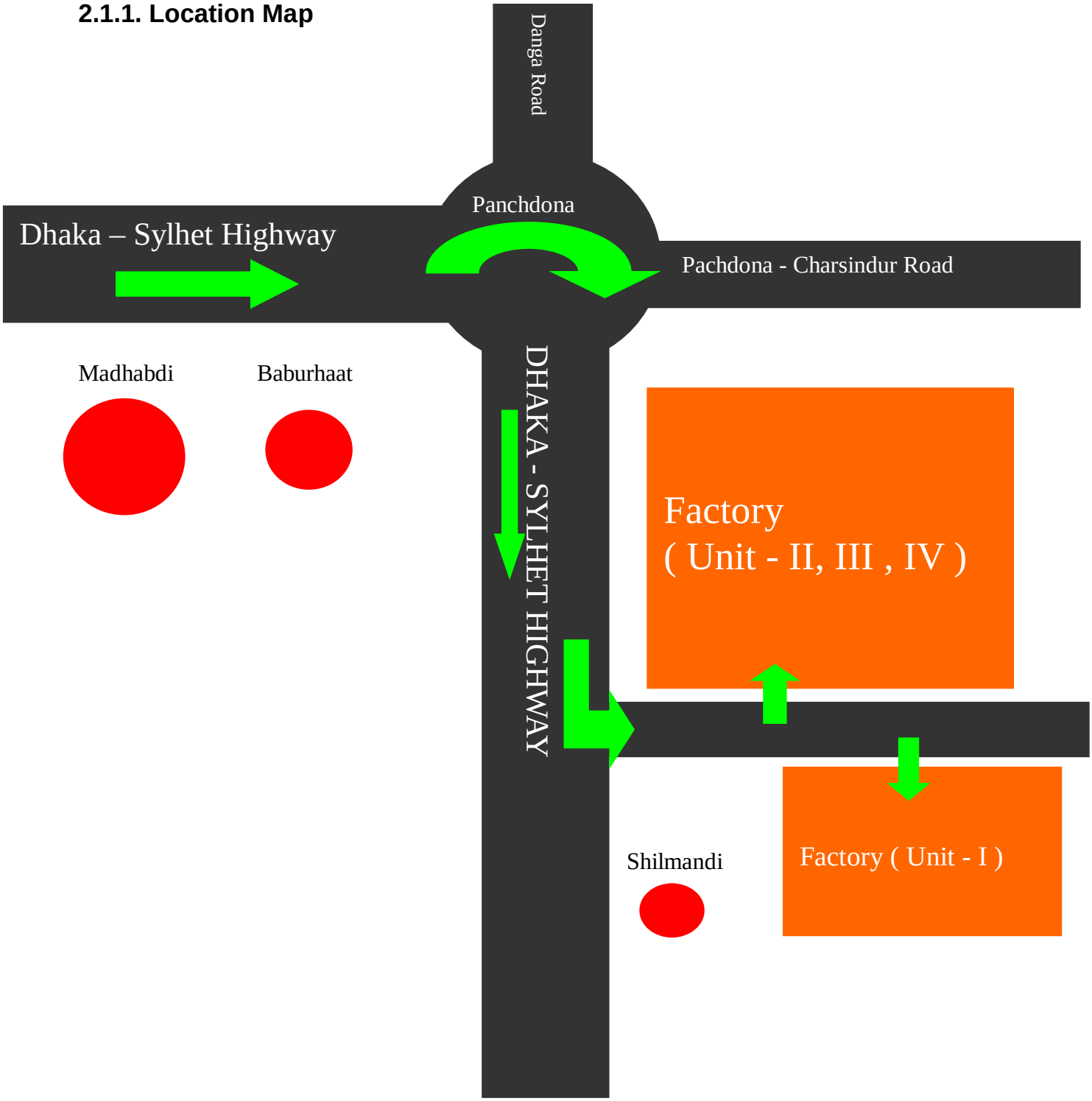
Total Investment : Approximately 90 Million US Dollar

Investor :Mr. Abdullah Al Mahmud Mahin

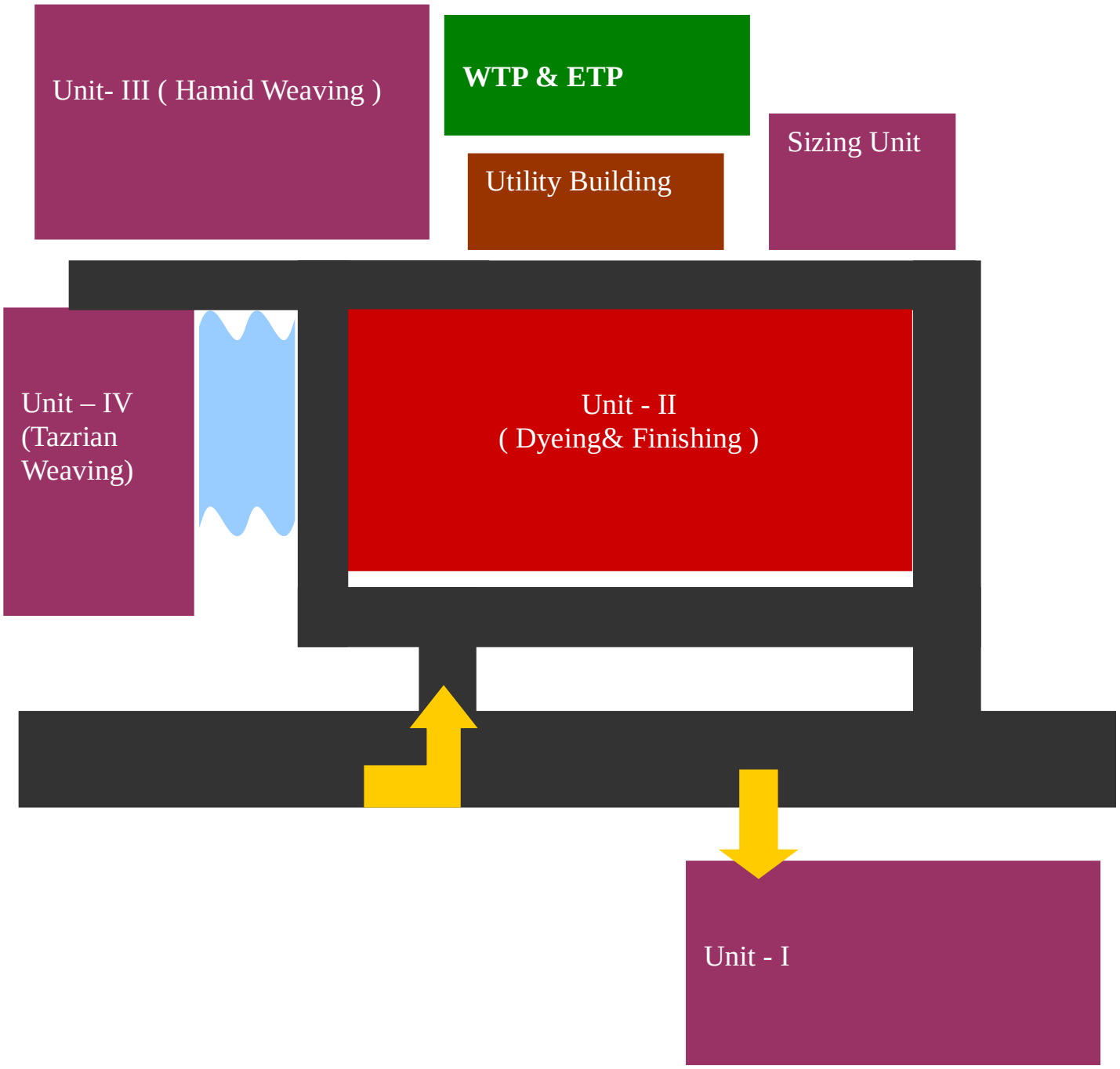
Total Workforce : Around 1500

Annual Turnover : Approximately 100 Million US Dollar

2.1.1. Location Map



2.1.2.Factory Layout



2.1.3.Production Capacity :

Weaving : 65000 yds/day

Dyeing : 82000 yds/day

2.1.4.Product Mix :

Woven Fabric :

100% Cotton Twill/Blended Fabric , Canvas , Oxford , Ribstop , Ottoman , Herringbone , Calico , Poplin , Broken Twill , Matt , Dobby , Stretch Fabric , Cotton Linen , Bedford Cord

2.1.5.Vision :

1.Building a true marketing led enterprise with motivated workforce, innovative vision, and strong revenue based product portfolio, customer satisfaction & understanding of global market.

2.To be one of the best leading Home Textile weaving mill in Bangladesh

2.1.6.Mission :

Merging capabilities with topnotch technology, to provide the stakeholders with the best possible products, services, and experiences.

2.1.7.Goals :

Mahin Group believes in ethical business practices to become a strong, reliable and trustworthy partner, for companies throughout the world. It has been working within this dimension to achieve the following goals:

1. Create a quality benchmark in every aspect of its business
2.Maintain and further enhance customer satisfaction in terms of quality and price
3.Formulate a happy, motivated and skilled workforce
4.Produce within environmental guidelines and work towards Green Production
5.Create jobs for people and retain them with steady, controlled and focused company growth
6.Contribute to the country's economic sustainability with our exports and business practices.

2.1.8.Environmental Commitment :

Hamid Fabrics Ltd is committed to preserve its manufacturing process as envirenment friendly as possible . The Company aims to keep surrounding environment free from pollution . The company has planted a number of different trees both within factory area. The company has set up a highly effecientEffuent Treatment Plant capable of reducing pollutants from water in a large scale .

2.1.9.Worker's Health & Safety Issue :

Hamid Fabrics Ltd sees its workers as labors but as members of a family . Therefore their safety is a big priority to the company . The company has a dedicated section for cleaning and thus keeping a healthy environment in the factory . In case of emergency like fire it has a pre -planned exit system . There are plenty of fire extinguisher and more importantly the company has a program to train its workers how to use them . Thus the company has established its own fire fighter team . The company has also build up a close connection with nearest fire brigades .

2.1.10.Membership Certificates :

Oeko-tex -100

2.1.11. List Of Major Buyers :

1. Marks &Spancer
2. Zara
3. Charles Vogele
4. H&M
5. S. Oliver
6. Espirit
7. Tesco
8. BHS
9. UNIQLO
10. LC Waikiki
11. Levi's
12. Next

2.2 Manpower Management

Management is one of the most important process for any business . Management is the activities containing planning , organizing , controlling to ensure best use of available resources for optimum profit and taking quick measure to solve any problem

2.2.1 Management System :

In Mahin Group there is a central controller that is Managing Director , who controls the entire company . Besides him there are also Director & General Manager who control the factory itself .
All the departments are controlled by respective departmental head i.eManager .

Hamid fabrics Ltd has a line of skilled employees in administration , marketing & management sections who work really hard to ensure that the factory always run properly . They also provide best support to their workers . Management system helps the company to attract buyers and increase overall profit . Management system also deals with various problems and handles them with great care to solve them quickly and effectively .

2.2.2 Shift :

Textile mills run 24 hours a day continuously in different shifts . In Hamid Fabrics Ltd employees work in following shifts

1. Shift A : From 10.00 P.M to 6.00 A.M
2. Shift B : From 6.00A.M to 2.00 P.M
3. Shift C : From 2.00 P.M to 10.00 P.M
4. General Shift : From 8.00 A.M to 5.00 P.M

2.2.3 Duties & Responsibilities of Different Post :

2.2.3.1. Managing Director :

1. To deal with the buyer and merchandiser
2. To set up price for the product
3. To control all the sections of the company

2.2.3.2. General Manager :

1. To control everything that occurs in the factory
2. To control administrative activities
3. To supervise managers working under him
4. To follow the instruction of Managing Director

2.2.3.3. AGM (Production) :

1.Overall supervision of dyeing & finishing
2.To plan the sequence of production
3. To check the plan to control best output
4. To supervise the managers under him

2.2.3.4. Head of the Department :

1. To control the executives , supervisor , operator and helper of the Machines
2. Program making
3. To calculate amount of chemicals required

4. To solve any problem arising in respective department
5. To find out the reason behing any production fault or failure
6. To ensure maximum quality and quantity in production

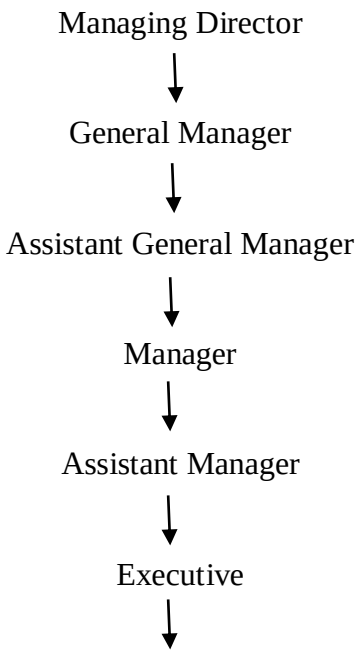
2.2.3.5. Production Officer :

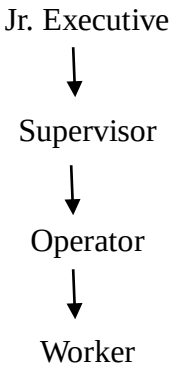
1. To collect necessary information from previous shift for smooth running of the section
2. To match production sample with target shade
3. To execute overall floor work
4. To supervise personal working under him
5. Batch preparation

2.2.3.6. Shift In Charge :

1. To follow workers movement
2. To maintain the production sequence
3. To check sample at certain time interval
4. To write loading & unloading time
5. Discuss with production officer about production status

2.2.4 Organ Gram :





2.2.5 Total Manpower In Different Departments Of Unit - II :

1. Administration :
Officer : 7
Staff : 57
Worker : 22
Total : 86

2. Security :
Staff : 11
Total : 11

3. Cleaning :
Staff : 3
Worker : 9
Total :12

4. Planning :
Officer : 4
Staff : 1
Total : 5

5. Accounts :
Officer : 9
Staff : 1
Total :10

6. Store :
Officer ; 9

Staff : 5
Worker :37
Total : 51

7.Civil:
Officer : 3
Worker: 11
Total : 14

8. Electrical :
Officer :3
Staff :2
Worker : 15
Total : 20

9. Mechanical :
Officer : 4
Staff : 5
Worker : 19
Total : 28

10. Utility :
Officer : 1
Staff : 7
Worker : 16
Total : 24

11. Sample :
Officer : 1
Staff : 5
Worker : 2
Total : 8

12. Laboratory :
Officer : 6
Staff : 13
Total : 19

13. Quality Control :
Officer : 9
Staff : 14
Total :23

14. Pilot Plant :
Officer : 6
Staff : 10

Total : 16

15. Preparation :
Officer : 12
Staff : 3
Worker : 70
Total : 85

16. Dyeing :
Officer : 9
Staff : 7
Worker : 62
Total : 78

17. Finishing :
Officer : 8
Staff : 4
Worker : 31
Total : 43

18. Inspection & Rolling :
Officer : 10
Staff : 3
Worker : 69
Total : 82

19. IT :
Officer : 2
Total : 2

20. Casual Labor :
Labor :13
Total : 13

Grand Total : 630

Chapter -3 : Description Of Attachment

3.1. Quick Overview Of Weaving Section

Hamid Fabrics Ltd is one of the leading woven fabric manufacturer of Bangladesh with a capacity of around 24 million yards per year . It was established in early 90's and since then it has served the growing demand of export quality woven fabric from Bangladesh . Now the company own 3 units dedicated solely on weaving . It has a wide range products exported to different countries . International buyers have long been satisfied with the quality of fabrics produced by the factory .

Established : 1993

Machines : 104 Airjet
120 Rapier Loom

Capacity :
65000 yds/day
24 Million yds/year

Sources of Material :

Yarn :High quality yarns from Bangladesh , India , Thailand , Indonesia

Greig : Sometimes cotton and blended grey are imported from Indonesia , Thailand , India

Product Range :
100% Cotton Twill/Blended Fabric , Canvas , Oxford , Ribstop , Ottoman , Herringbone , Calico , Poplin , Broken Twill , Matt , Dobby , Stretch Fabric , Cotton Linen , Bedford Cord

Best Selling Products :

Twill :
140*74/40/2*40/2
152*95/30*2
143*112/40*40
157*110/40*40
72*42/7*7
130*70/30*30

Poplin :
133*100/40*40
144*76/50*50
144*90/40*30
133*72/40*40

Ribstop :
116*82/30*30
144*96/40*30
135*71/30*20

Bedford Cord :
116*58/16*16
145*86/30*20

Canvas :
108*58/40/2*40/2
116*56/20*16
133*85/30*30

Dobby :
152*75/30*10
128*62/20*10
154*90/40*20

Herringbone :
150*110/30*30
116*78/16*20
158*84/30*20

Matt:
112*54/(16+16)*(12+12)
105*60/(16+16)*(10+10)

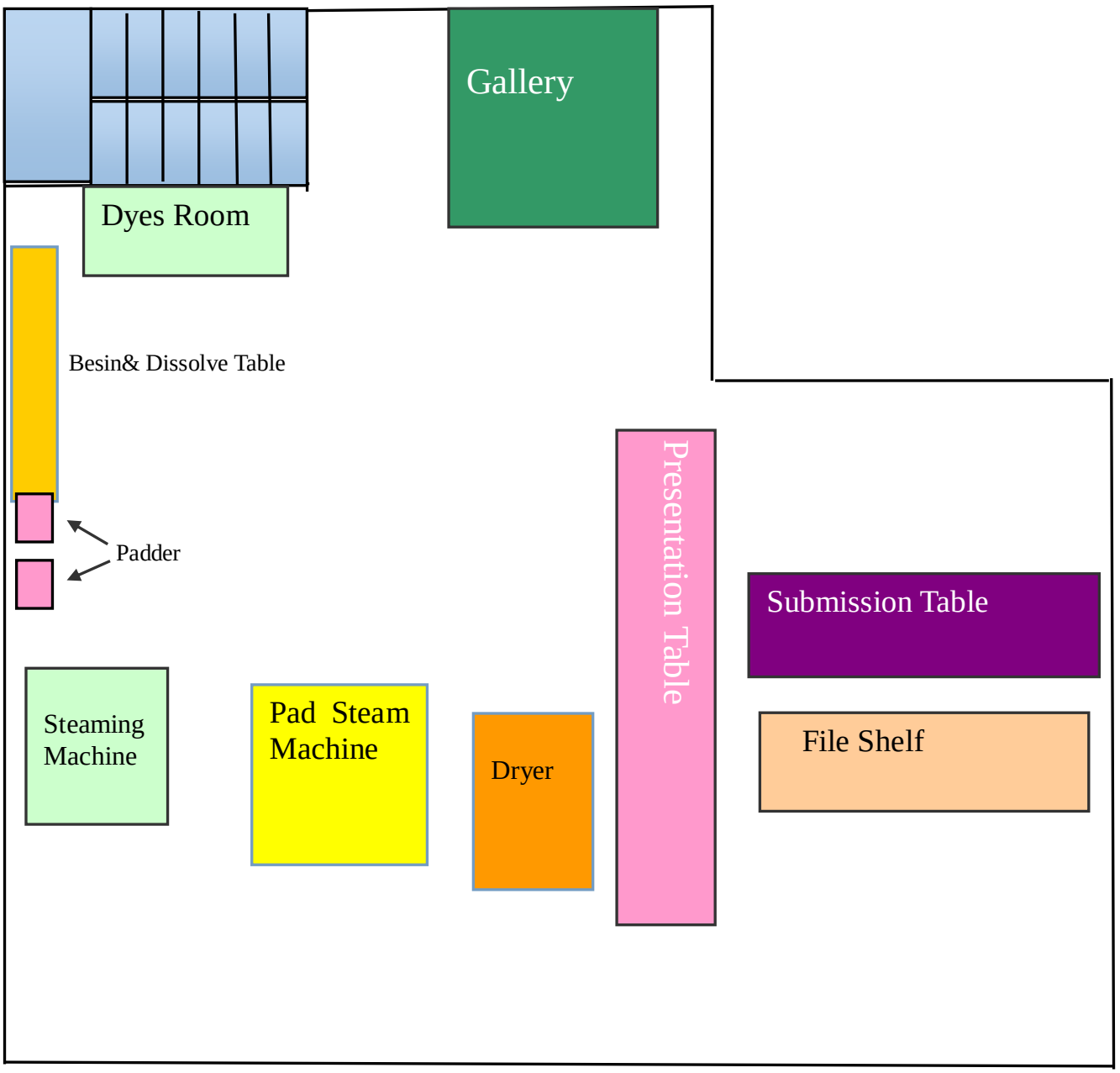
Machines Used :

Winding Machine
Warping Machine
Sizing Machine
Weaving Machine

3.2. Dyeing Section

3.2.1 DyeingLab

3.2.1.1. Section Layout



3.2.1.2 Activities Of Laboratory :

3.2.1.2.1. Lab Dip :

A lab dip is a swatch of fabric test dyed to hit a color standard. It is a process by which buyer's supplied swatch is matched with the varying dyes percentage in the laboratory with or without help of spectrophotometer. Lab dip plays an important role in shade matching & this is an important task before bulk production .

There are different matching systems followed in Labs. They are :

1. Tube light matching.
2. Sun light matching.
3. Ultra Violet matching.
4. Sodium light matching (show room).

Objective of Lab Dip:

The main objectives in lab dip are as follows:

1. To calculate the recipe for sample dyeing.
2. To compare dyed sample with swatch by light Box or Spectrophotometer.
3. To calculate revise recipe for sample dyeing.
4. Finally approved Lab Dip (Grade: A, B, C & D)

3.2.1.3 Process Sequence of Lab Work :

Lab dip plays an important role in dyeing process**.** Bulk dyeing process completely depends on the lab dip development work. Lab dip is completely managed as the following sequence.

Lab Dip Requisition from buyer
↓
Entry in the computer
↓
First recipe is given by swatch/pantone number
↓
First correction
↓
Second correction
↓
Grading of sample (A, B, C, D)
↓
Send for buyer's approval
↓
Approved by buyer
↓
Order for bulk production
↓
Production card with approved sample and recipe send to production section.

3.2.1.4 Sample Dyeing Methods :

3.2.1.4.1. PDS Method :

Process Sequence :

A) Dyeing Solution Preparation
B) Dyeing
C) Fixing

A) Dyeing Solution Preparation :

1. At first in a beaker dyes are taken
2. Then little water is added and stired for several minutes
3. Then 50ml/L Thermocol MP is added
4. Then 2ml/L Alba Flow Pad is added
5. Then rest of the beaker is filled with required water
6. Then mixed solution is stirred until it dissolves

B) Dyeing :

1. Dyeing solution is kept on the dyeing bath of padderMachine
2. Machine is started and fabric passes through dyeing bath and then squeezed by padder
3. Dyeing is completed

C) Fixing :

Fixing consist of several processes . In fact total fixing process takes much longer time than dyeing itself

1. Drying : The dyed fabric is dried in oven at 100C temperature for 1 minute
2. Fixing via PDS chemical : Then the fabric is treated with PDS chemical in padder Machine

   PDS chemical is a mixture of 3 chemicals with certain concentration as follows

   PDS Chemical :

   Glauber Salt : 250gm/L
   Soda Ash : 20gm/L
   Caustic : 6gm/L

3. Steaming Then the fabric is treated with steam in a steamer at 100C temperature for

1 minute

4. Cold Washing : Fabric is then washed in cold water
5. Hot Washing with Alba Flow Pad : Fabric is then washed in hot water with 2ml of Alba Flow Pad
6. Hot washing with water : Then fabric is again hot washed this time with only water
7. Then fabric is ironed with an iron machin

3.2.1.4.2. CPB Method :

Process Sequence :

1.Take Dyes

2.Add some water

3.Stire

4.Add CPB chemical

CPB chemical for dyeing medium shade : Na Silicate 40cc/L

Caustic 20cc/L
Urea 10cc/L
Alba Flow Pad 2ml/L

5.Dyeing in CPB Machine

6.Drying for 20-30 minutes in microoven

7.Washing with hot water twice

8.Washing with cold water twice

9.Squezzing with padder

10.Ironing

11.Cut a small piece to send with labdip for color match

3.2.1.4.3. Vat Method :

Process Sequence :

A) Vatting
B) Dyeing
C) Oxidation
D) Washing

A) Vatting :

For 200ml solution preparation

1. Take dyes
2. Add some water
3. Add 2ml Alba Flow Pad
4. Add 40ml Thermocol MP
5. Add Cetamol WS
6. Stire the solution until it dissolves

B) Dyeing :

1. Take dyeing solution in dye bath and complete coloration
2. Dry the colored fabric in oven for 2 minutrs
3. Fix the color with vat chemical through steaming in pad steam Machine

Vat chemical :Glauber salt : 70gm/L
Soda Ash : 5gm/L
Hydrose: 75gm/L
Caustic : 60gm/L

C) Oxidation :

1. Take the sample in a mug and rinse it
2. Carry on oxidation process by rinsing the fabric with 16ml H_2O_2 and 6gm Soda in 2L water for 2 minutes

D) Washing :

1. Wash in water
2. Wash again in hot water
3. Wash with Abla Flow pad mixed with water
4. Squeeze by padder
5. Iron the fabric
6. Send for color check

3.2.1.5. Specification Of Machines Used :

1. Rapid Padder :

Brand : Rapid
Origin : China

Speed : 0-20 RPM
Standard Speed during dyeing : 10 RPM
Standard Applied Pressure by padder
Voltage : 220V

2. CPB Padder :

    Brand : Roaches
    Origin : England
    Standard Pressure applied by padder : 4 bar
    Voltage : 230V

3. Steaming Machine :

Brand : Roaches
Origin : England
Standard Temperature : 100C
Voltage : 400V

4. Pad Steam :

Brand : Rapid
Origin : China

5. Dryer :

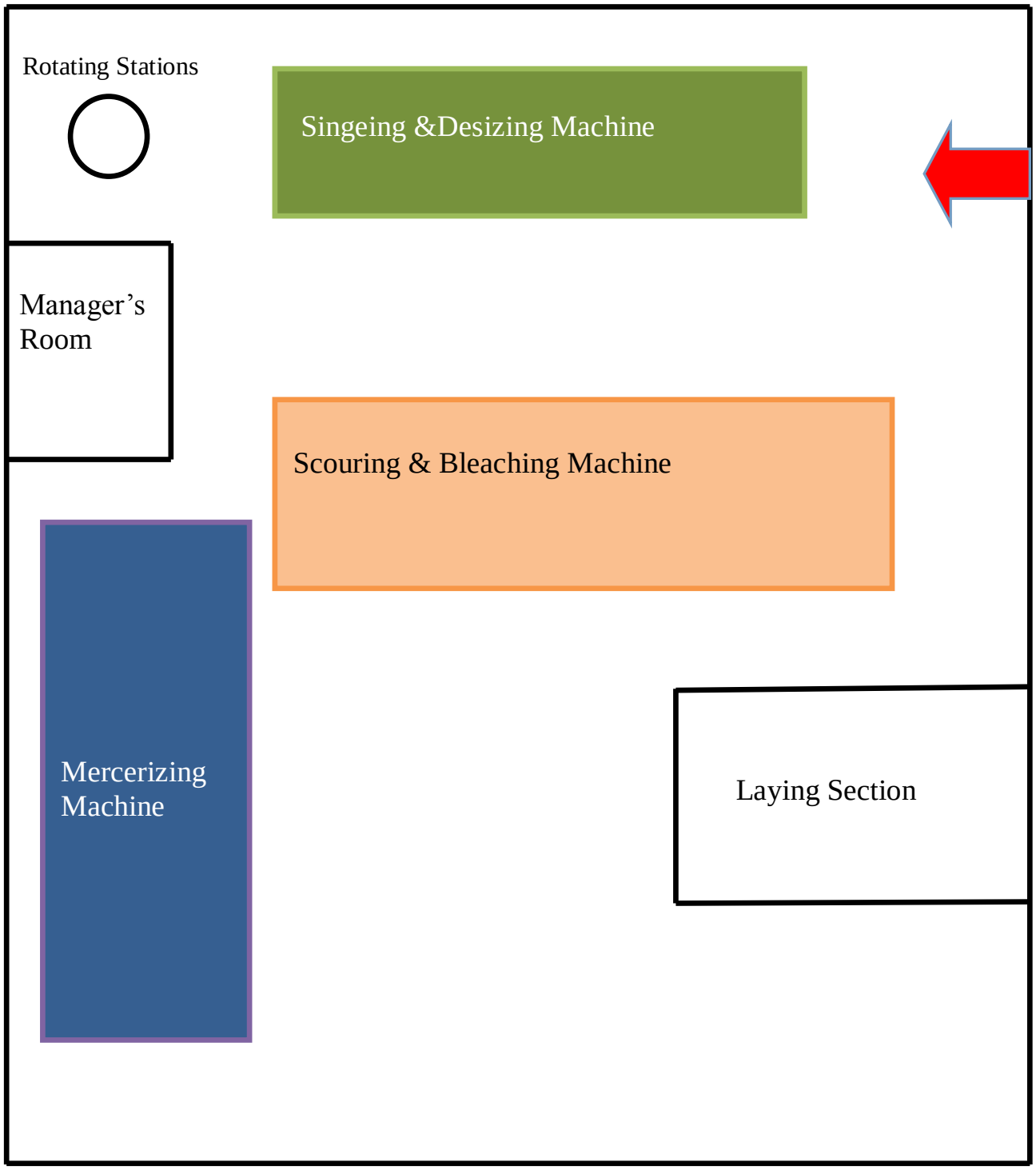
    Brand : Rapid
    Origin ; China
    Model : R-3
    Voltage : 380V
    Temperature Range : 0-200C
    Standard Temperature : 100C
    Standard process duration : 1-2 minute

6. Oven :

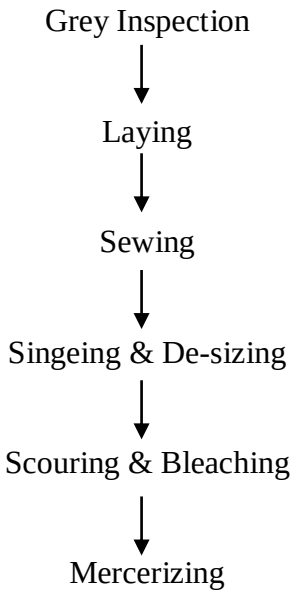
Brand : P Selecta
Origin : Spain
Voltage : 230V
Temperature Range : 0-250C
Standard process duration : 2-3 minutes

3.2.2 Pre-Treatment

3.2.2.1. Section Layout



3.2.2.2 Sequence Of Operation :



3.2.2.3 Machines Used :

1. Singeing &DesizingMachine
2. Scouring & Bleaching Machine
3. Rotating Stations
4. Mercerizing Machine
5. Inspection Machine

3.2.2.4 Processes Performed :

3.2.2.4.1 Singeing & De-sizing :

Singeing :Singeing is a process applied to both yarns and fabrics to produce an even surface by burning off projecting fibres, yarn ends, and fuzz. This is accomplished by passing the fibre or yarn over a gas flame or heated copper plates at a speed sufficient to burn away the protruding material without scorching or burning the yarn or fabric.

Singeing can be done by various methods such as plate singeing, roller singeing, gas singeing. In hamid fabrics ltd gas singeing Machine is used for singeing

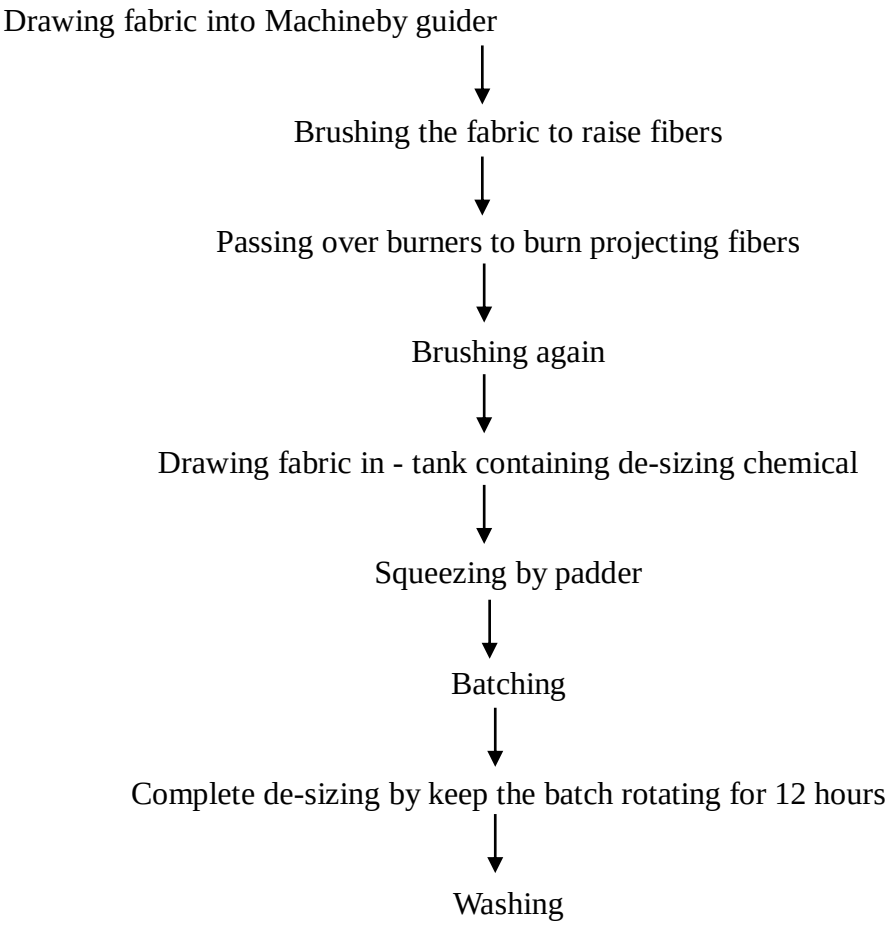
De-sizing : De-sizing is a process by which size materials from warp yarn in woven fabric is removed . For de-sizing a de-sizing agent is used which degrades the size material .

De-sizing can be done in various process such as Chlorite de-sizing, Bromite de-sizing, Rot steeping, Acid steeping, Alkali steeping, Enzymatic de-sizing. In hamid fabrics ltd enzymatic de-sizing is used which uses enzyme that degrades size material of fabric.

In hamid fabrics ltd singeing & de-sizing are carried out successively in a single Machine consists both singeing and de-sizing parts .

Fig: Singeing & De-sizing Machine

3.2.2.4.1.1 Process Sequence :



3.2.2.4.1.2 Recipe for de-sizing :

Type of fabric: 100% Cotton Twill
Chemicals used:
Acetic acid : 0.3g/L
Sequestering agent:
Foralyas AT:
Securon C:
pH: 5.5-6.0
Temperature: 60C

3.2.2.4.1.3 MachineSpecification :

Type of the Machine : Gas singeing & enzymatic de-sizing Machine
Brand :Kuster
Burner: Osthoff
Origin: Germany
No of burners: 2 in opposite flame direction
No of brushing unit: 2
Padder pressure: 0.2-0.4 bar
Batching time: 12 hours
Length of fab1ric required to pass the Machine: 50m
Capacity on a single batch: 4000m

3.2.2.4.1.4 Different parts of the Machine :

Guider: It guides and draws fabric in to the Machine

Tension roller: It puts sufficient pressure on the fabric

Tension roller controller: It controls the tension of tension roller

Brush: It raises the fiber of thee fabric so that they can be burned off the fabric easily

Burner: It burns the fibers raised from fabric surface to provide a smooth appearance. It is powered by gas to make flame.

Draw roller: It draws fabric from one place to another in the Machine

Chemical bath: It is a bath containing de-sizing chemical. Here chemicals react with size material and degrades them partially

Padder: It squeezes extra chemical from fabric

Rotating stations: It is a batcher filled with treated fabric that rotates for a certain time period to accomplish the de-sizing. Here enzymes reacts with size material and degrades them. For proper de-sizing enzyme requires a certain time which is around 8-12 hours.
After that fabric is washed to remove degraded size material.

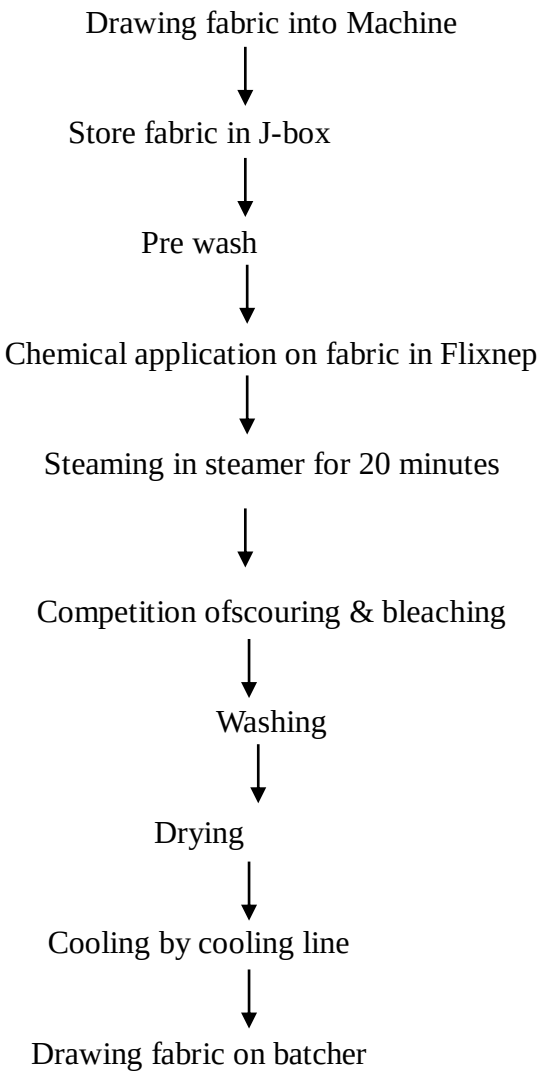
3.2.2.4.2. Scouring & Bleaching

Scouring: Scouring is a process of removing the impurities such as oil, wax, fat, dirt and dust from the textile material to make it hydrophilic

Bleaching: Bleaching is the process by which textile material becomes white by the destruction of natural color matters of fiber.

In Hamid Fabrics Ltd scouring & bleaching are carried out together in the same machine

3.2.2.4.2.1. Process Sequence



3.2.2.4.2.2. Recipe

Wetting agent : 1g/L
Detergent: 2g/L
Sequestering agent: 1g/L
Caustic soda: 4g/L
Hydrogen peroxide (H2O2): 4g/L
Peroxide stabilizer: 1g/L
Temperature: 95C in wash bath, 97C in steamer, Dryer 110C
pH: 10.5

3.2.2.4.2.3. Machine Specification :

Brand: Kuster
Origin: Germany
Capacity: 60000m/day
Speed: 60m/min
Fabric length to pass through the machine: 500m

3.2.2.4.2.4. Different parts of the machine

J-box: Here fabric can be stored if necessary

Guider: It guides and draws fabric in to the Machine

Tension roller: It puts sufficient pressure on the fabric

Pre washer: here fabric is washed before treating with chemical

Tension roller controller: It controls the tension of tension roller

Draw roller: It draws fabric from one place to another in the Machine

Flixnep: It is a bath containing scouring &bleaching chemical. Here chemicals react with textile material

Dryer: Here fabric is dried

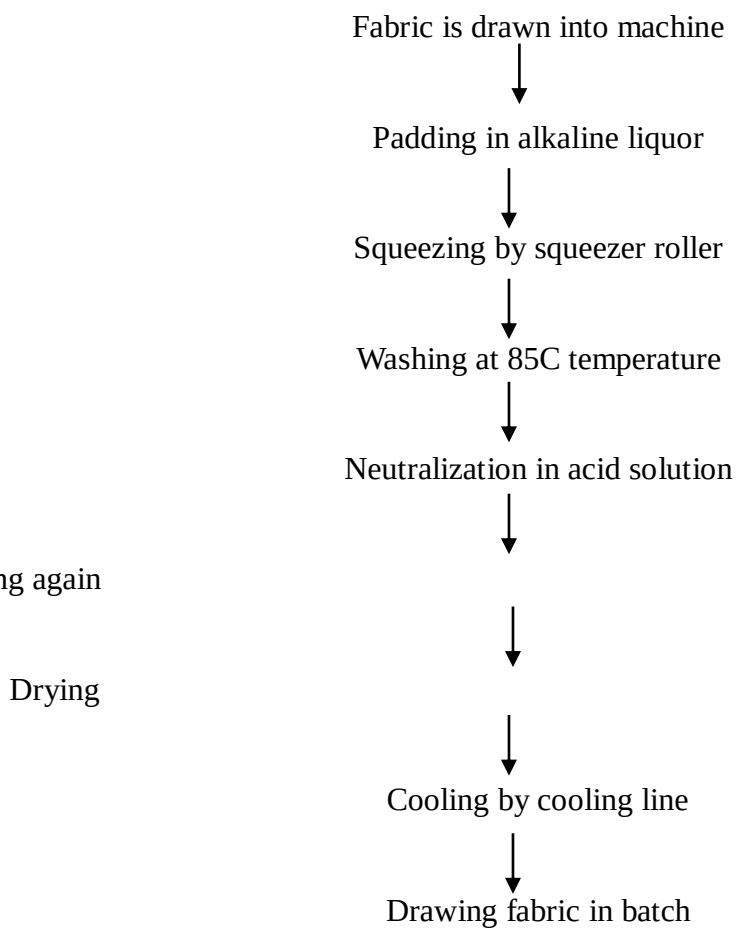
Cooling line: It cools fabric

Steamer: It is a closed container that treats fabric with steam to complete scouring & bleaching

3.2.2.4.3 Mercerizing

Mercerizing: It is a process by which luster & smoothness of fabric is improved by treating with alkali solution . In this process alkali absorbed by cotton fiber and then cross sectional shape of cotton is changed to kidney shape to circular shape thus increasing its luster, absorption and other properties.

3.2.2.4.3.1. Process sequence:



3.2.2.4.3.2. Machine Specification :

Brand: Kuster
Origin: germany
Speed: 45m/min
Fabric length required to pass through the machine: 275m

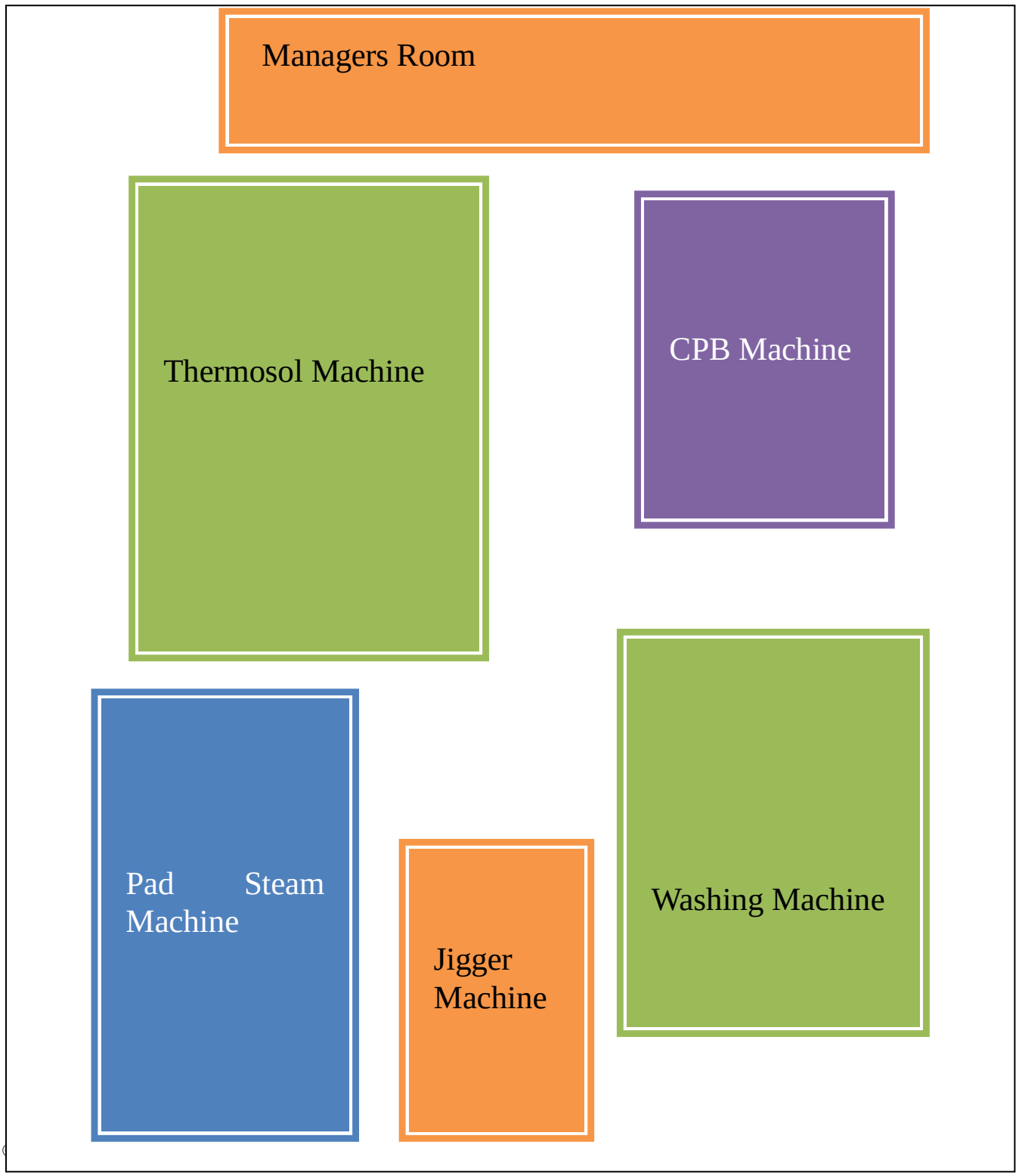
3.2.2.4.3.3. Parts of the machine:

1. J-box: Here fabric can be stored if necessary
2. Pressure padder: To put pressure to penetrate chemicals into fabric
3. Guider: It guides and draws fabric in to the Machine
4. Tension roller: It puts sufficient pressure on the fabric
5. Tension roller controller: It controls the tension of tension roller
6. Draw roller: It draws fabric from one place to another in the Machine
7. Dryer: Here fabric is dried
8. Cooling line: It cools fabric
9. Caustic bath: It contains caustic solution that mercerize cotton
10. Chain: It keeps fabric straight
11. Disk: It drives chain

Fig: Mercerizing Machine

3.2.3. Dyeing

3.2.3.1. Section Layout



3.2.3.2. Processes Performed :

3.2.3.2.1. Vat Dyeing Method:

Process sequence:

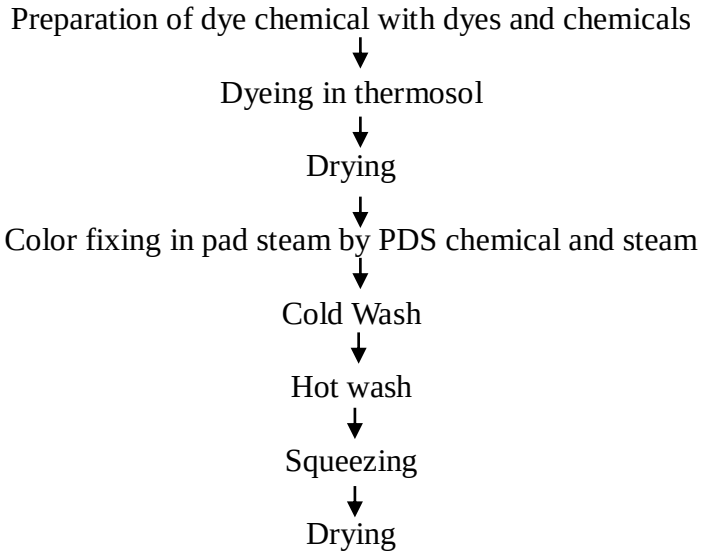
Preparation of dye chemical with dyes and chemicals
↓
Dyeing in thermosol
↓
Drying
↓
Color fixing in pad steam by vat chemical and steam
↓
Oxidation
↓
Cold Wash
↓
Hot wash
↓
Acetic acid wash
↓
Squeezing
↓
Drying

Dyeing chemical : Dyes + 2g/L alba flow pad + 10g/L Thermocol MP

Fixing chemical:
Glaubersalt : 60g/L
Caustic: 60g/L
Hydrous: 60g/L
Soda ash: 5g/L

3.2.3.2.2. PDS Dyeing Method

Process sequence:

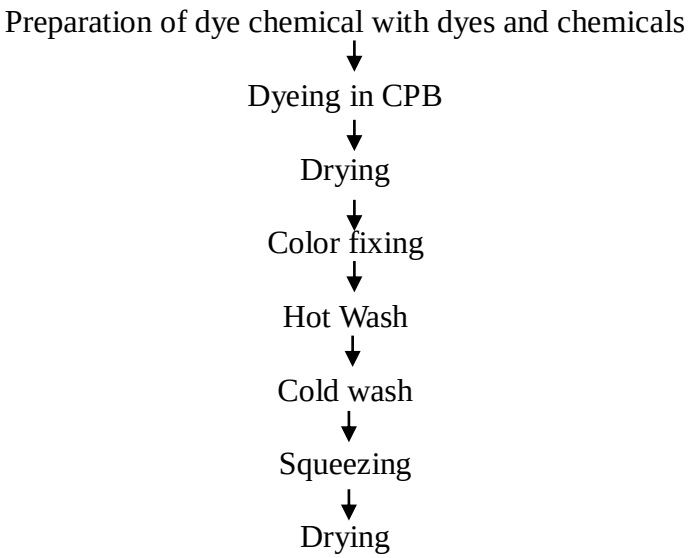


Dyeing chemical : Dyes + 2g/L alba flow pad + 10g/L Thermocol MP

Fixing chemical:
Glaubersalt : 250g/L
Caustic: 6g/L
Soda ash: 20g/L

3.2.3.2.3. CPB Dyeing Method

Process sequence:



Dye chemical: Dye + 50g/L Silicate + 30g/L Caustic

3.2.3.3. Machines Used :

1. Thermosol machine
2. Pad Steam machine
3. CPB machine
4. Washing machine
5. Jigger machine

3.2.3.3.1. Thermosol Machine

Brand:
Operating Board &Paddder: Kuster,
Origin: Germany
Burner & plan board: Bruckner
Origin: Germany
Machine speed: 65m/min
No of roller: 169
Fabric length to pass through machine: 220m
Capacity of dye and chemical tank: 2000L (1) , 1100L(1), 1000L(1), 500L(1)
Temperature: 95C-100C in burners, 135C-155C in IR

Major defining parts of thermosol machine:

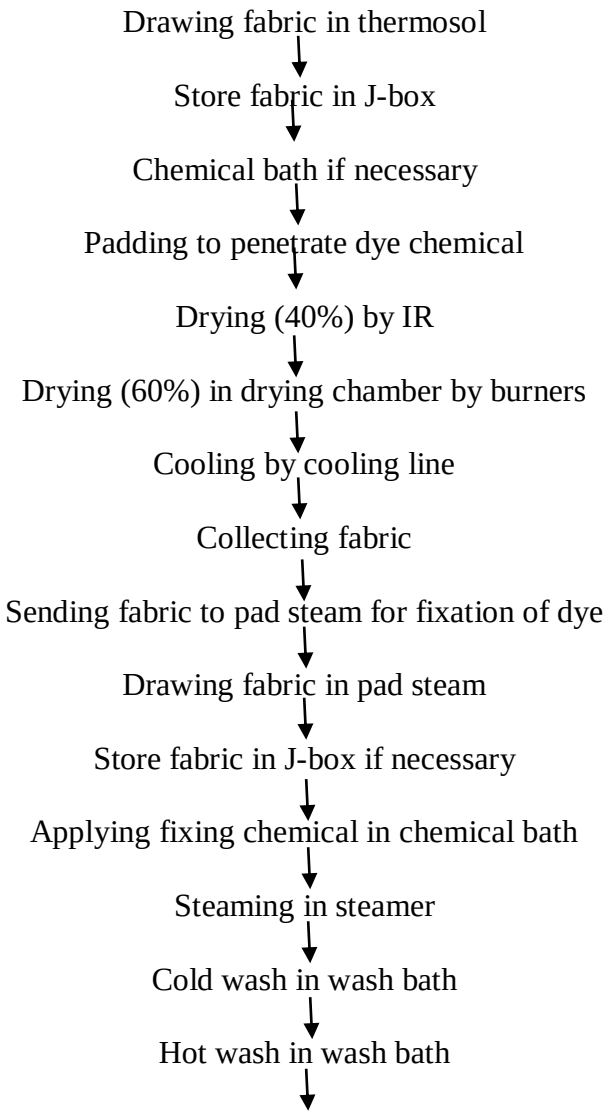
1. IR: Infra Red Burner
2. Blower: A device that blows wind through burners
3. Pit Roller
4. Drying chamber: Here fabric is dried
5. Burner: It provides heat for drying
6. Winder: It lays the fabric properly in delivery zone

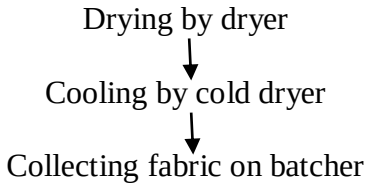
Fig: Thermosol Dyeing Machine

3.2.3.3.2. Pad Steam machine

Brand: Kuster
Origin: Germany
Speed: 60m/min
Fabric length to pass through the machine: 235m

Sequence of operation in thermosol and pad steam machine (Combined):





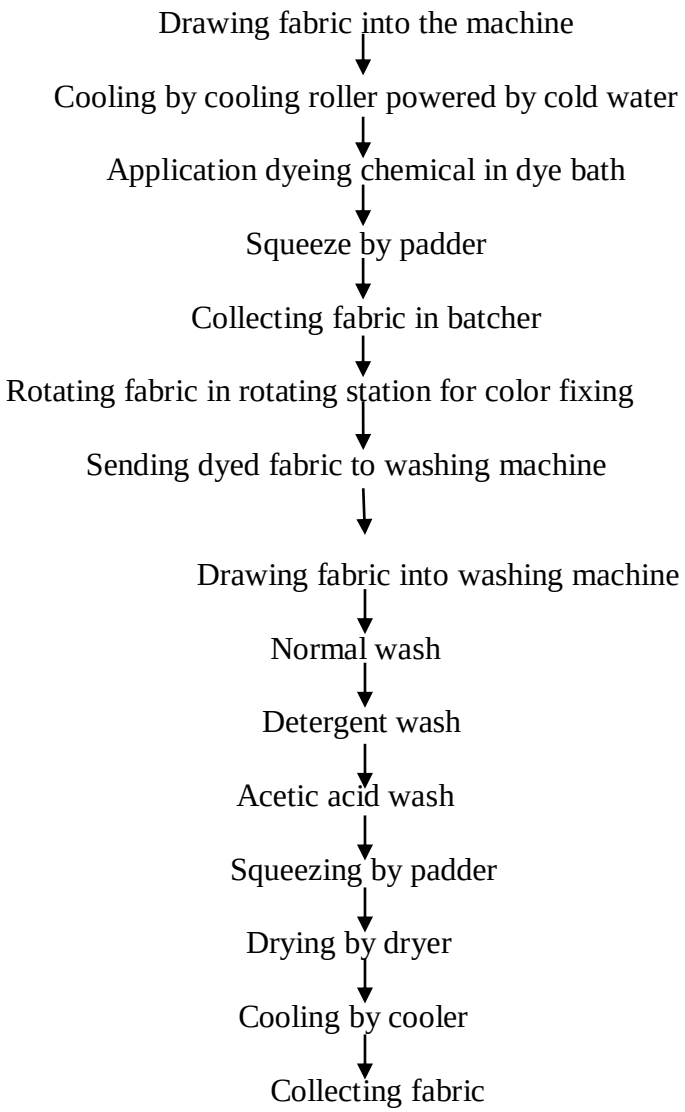
3.2.3.3.3. CPB (Chemical Pad Batch) machine:

Machine Specification:
Brand: Kuster
Origin: Germany
Speed: 45m/min
Capacity:
Dye making bath: 200L
Chemical making bath: 175L
Chemical store tank :1000L
Fabric length required to pass through the machine : 25m

3.2.3.3.4. Washing machine

Machine Specification:
Brand: Kuster
Origin: Germany
Speed: 50m/min
Fabric length require to pass through the machine: 250m
Temperature: 50C in normal wash bath, 70C in detergent wash bath, 50C in acid wash bath, 110C in dryer
Pressure: 0.5bar in normal wash bath, 0.6bar in detergent wash bath, 0.5bar in acid wash bath

Process sequence in CPB and washing (Combined):



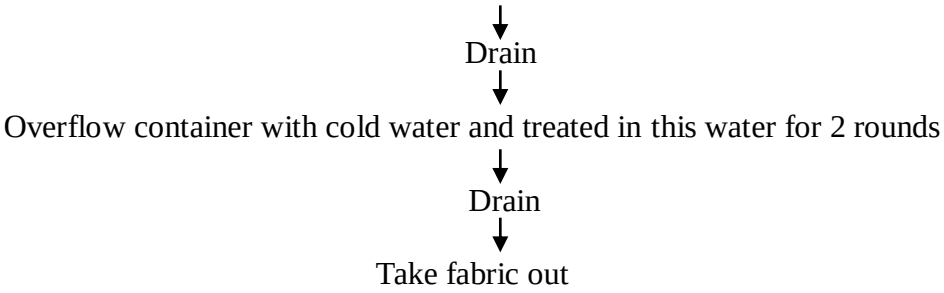
3.2.3.3.5. Jigger machine:

It is a versatile machine that can performs various processes like scouring, bleaching, dyeing, stripping etc
In Hamid Fabrics Ltd jigger is mostly used for stripping of defectively dyed fabrics

Machine Specification:
Brand: Sung Moo
Origin: Korea
Capacity: 1200-2000 kg solution, 3000m fabric

Process sequence for stripping by jigger:

Fill tank with 200L water
↓
Mount fabric on roller in machine
↓
Add caustic 10kg to make solution
↓
In 95C fabric is folded and unfolded from one roller ton another roller through this solution for 8 rounds
↓
Drain
↓
Hot wash with water for 4 rounds at 95C temperature
↓
Add new water 200L
↓
Add 12kg hydrous and 2kg caustic to make new solution
↓
Fabric is treated in this solution for 6 rounds
↓
Drain
↓
Hot wash at 90C for 4 rounds
↓
Cold wash for 1 round
↓
Add 200L new water and 500g acetic acid and treated in this solution for 2 rounds



3.2.3.4. A example of practical dyeing Recipe:

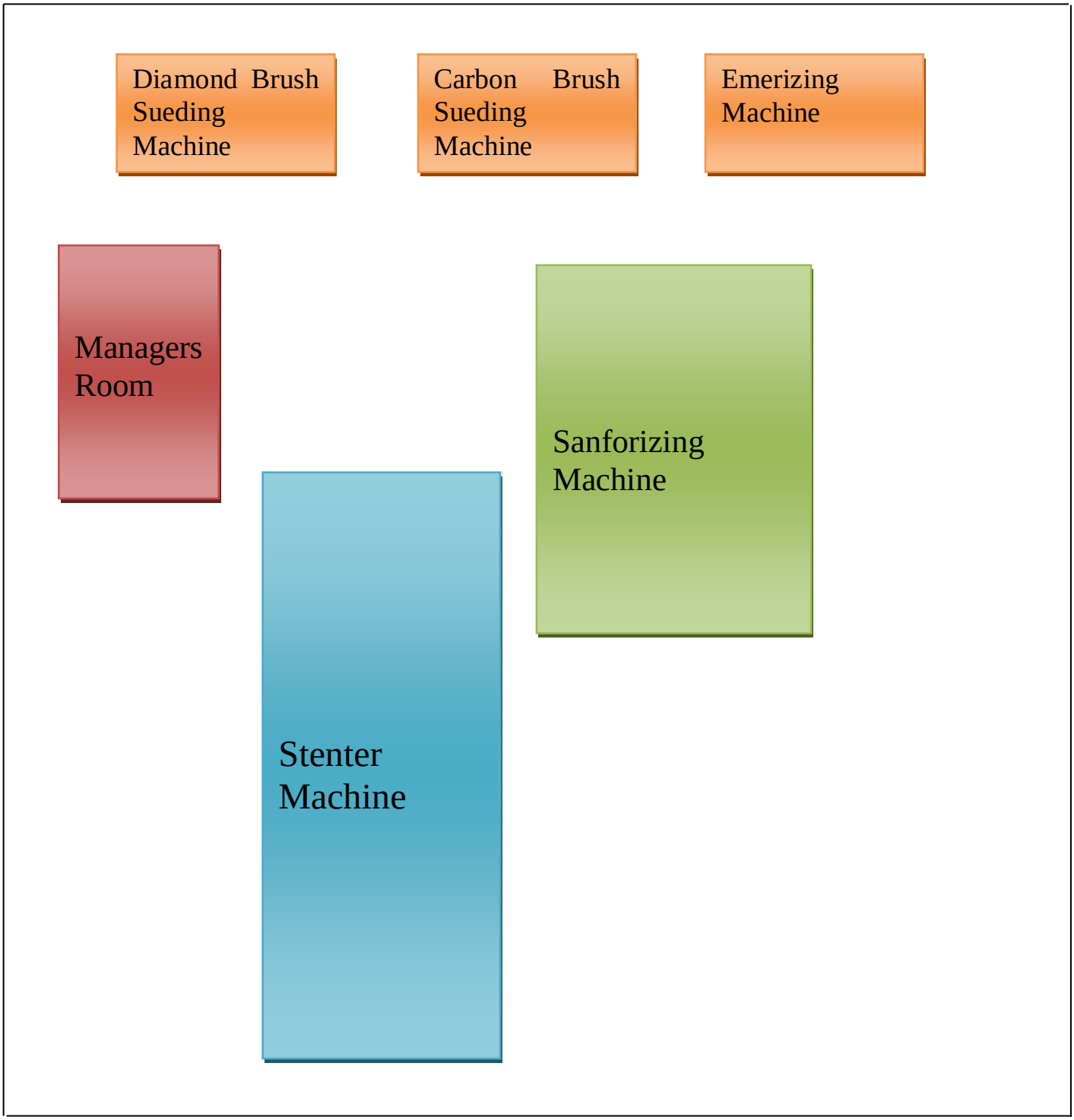
Process: Vat
Shade: Khaki

Required dyes:
Beza Yellow F3GC = 1.9g/L
Beza Brown G = 14.20g/L
Beza Grey RBN = 18.2g/L

Chemicals:
Alba flow pad = 2g/L
Setamol WS = 2g/L
Thermocol MP = 10g/L

3.2.4. **Finishing**

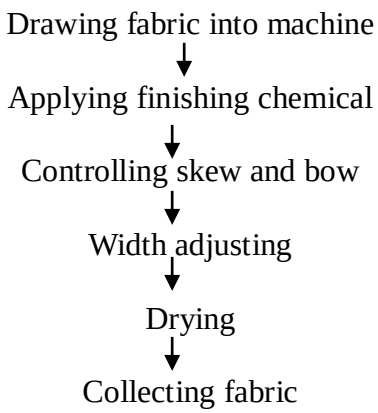
3.2.4.1. **Section Layout :**



3.2.4.2.Machines Used :

3.2.4.2.1. Stenter machine

3.2.4.2.1.1. Process sequence:



Processes Performed :

1. Soft Finish
2. Hard Finish
3. White finish
4. Paper touch
5. Peach finish
6. Water repellant

3.2.4.2.1.2. Machine Specification:

Brand: Bruckner
Origin: Germany
Capacity: 60000m/day
Speed: 50-80m/min
Fabric require to pass through the machine: 120m
Pressure of padder: 2bar

Temperature of burners : 130C-170C

3.2.4.2.1.3. Standard recipe for soft finish:

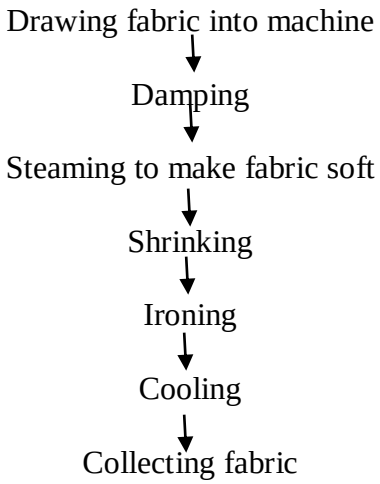
Belfasin : 5g/L
Siligen SIS: 10g/L
AlbafixR :10g/L
Acetic Acid: 0.5g/L

3.2.4.2.1.4. Standard recipe for white finish:

Uvitex MST: 1.5g/L
Uvitex 2B: 3g/L
Siligen SIS: 5g/L
Parapret FPEB: 5g/L

3.2.4.2.2. Sanforizing machine

3.2.4.2.2.1.Process sequence:



3.2.4.2.2.2. Machine Specification:

Brand: Monforts
Model: E.U.A Kombi
Origin: Germany
Capacity: 80000m/day
Speed: 50m.min
Fabric length required to pass through the machine: 40m

Applied Pressure:
Steam drum : 3-5 bar
Steam Cylinder: 2.5 bar
Rubber blanket: 4.5bar

3.2.4.2.3. Carbon brush sueding machine :

It uses spiked carbon brush for sueding

Fig: Carbon Brush Machine

3.2.4.2.4. Diamond brush sueding machine:

It uses roller on which small diamonds are attached as a coating

3.2.4.2.5. Emerizing machine:

It uses emery paper for sueding

3.2.5. **Quality Control**

The quality department is assigned to maintain consistently uniform quality of the material in process and various stages of its manufacturing. Quality control department checks the quality of a sample through different test and takes proper action to ensure desired quality.

3.2.5.1. **Objects of quality control:**

- Research,
- Selection of raw materials,
- Process control,
- Process development,
- Product testing,
- Specification test.

3.2.5.2. **Activities of QC department:**

In laboratory:

1.Swatch card from buyer according to their requirement,

2.Recipe prediction for sample dyeing,

3.Sample dyeing until matching with swatch card,

4.Fastness& other tests of the fabric or yarn are done here.

In dyeing section:

1. According to the buyer's sample, sample dyeing is done in sample dyeing Machine in dyeing shed &again matched with the approved sample,

2.If result is OK then bulk production,

3.During dyeing, samples are taken until accurate shade matching. The interval may be 30-40 min.

4.After dyeing sample is collected after softening matching is done,

5.Then sample is collected after fixation & matched,

6.Then allowed the fabrics to be finished.

In finishing section:

1.By using a series of finishing Machines correct width, softness & appearance are maintained according to requirements,

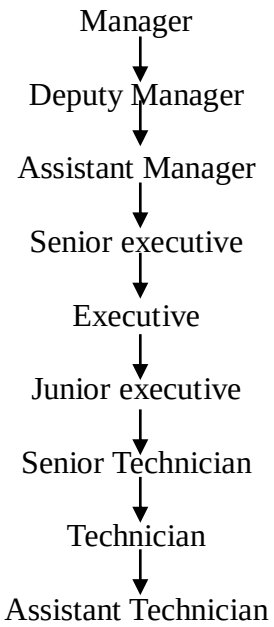
2.Then sampling is done for several times to test GSM, shrinkage & fastness properties,

3.Finally fabric is inspected & prepared for delivery.

3.2.5.3. **Quality control system :**

1. Online quality control
2. Offline quality control

3.2.5.4. **Organ gram :**



3.2.5.5. **Test performed:**

1. Physical test

a. Tensile strength
b. Tearing strength
c. Lycra property
d. Piling test
e. Abrasion test
f. Rubbing test
g. Fabric width
h. Fabric GSM
i. EPI & PPI

2. Fastness test

a. Color fastness to perspiration
b. Color fastness to washing
c. Color fastness to light

3.2.5.6. **Procedure of testes performed:**

1. EPI & PPI:
- Machine used: Thread counter
- Person responsible: Lab assistant
- Procedure: 1 square inch samples are taken from a fabric, these samples are taken one from the left , one from the right & other from the center threads of each samples are counted both weft & warp wise.

2. Fabric weight:
- Machine used: GSM cutter
- Performance standard: According to buyer's standard.
- Procedure: 3 samples are cut with GSM cutter. Find their average GSM.

3. Width test:
- Machine used: Measuring tape
- Procedure: Manual measurement by tape

4. Tensile strength:

- Machine used: Titan universal Strength Tester.
- Manufacturer: James H. Heal & company, Halifax, England
- Person responsible: Lab assistant
- Procedure: A sample of 20cm*10cm is taken and placed on jaws of the Machine . Machine increase its pressure on the sample until it breaks down. Final applied pressure is shown on the display

Fig: Titan Universal Strength Tester

5. Tear strength:

- Machine used: Tearing Tester
- Person responsible: Lab assistant
- Procedure: A sample of 10cm*6.3cm is taken and placed on the jaws of machine. Jaws move opposite and tears the sample. Force applied is shown on the display.

6. Seam slippage:

- Machine used: Titan universal Strength Tester.
- Manufacturer: James H. Heal & company, Halifax, England
- Person responsible: Lab assistant

7. Abrasion resistance:

- Machine used: Nu-Martindale Abrasion & pilling Tester.
- Manufacturer: James H. Heal & company, Halifax, England
- Person responsible: Lab assistant
- Procedure:

a. At first cut the fabric into 4 pieces according to the measurement of the instrument.
b. Weigh these 4 pieces of fabric samples.
c. Now place these samples in the instrument under a certain load as supplied in the instrument.
d. Now start the machine and observe the counter of abrasion no.
e. After an abrasion of 200 bring out the first sample and weigh it.
f. After an abrasion of 300 bring out the second sample and weigh it.
g. Similarly after abrasion of 400 and 500 bring out the third and fourth sample and take their weight.
h. Now put the weights before and after abrasions in a table and find out their wear index.

Fig: Abrasion and Pilling Tester

8. Wicking test :

- 18cm x 5 cm sample is cut from scoured sample
- In a beaker 0.1% Royal Blue color is taken
- After that a marker is drawn at 1cm above from the sample bottom.
- Now the sample is hung from a wood stick supported by immersing that 1cm portion of fabric in the dye liquor
- Then we measured the point upto which the colored solution in absorbed straight above way by the sample in 5 min time
- Standard range 30-50 mm.
  Expt. Sample Average range is 30 mm

9. Fastness to wash:

- Person responsible: Lab assistant.
- Fabric size: 10cm x 4 cm
- Temperature: 60°C
- Time:30min.
- Chemical: Soap or detergent & soda.
- Operation procedure:

a. Adjust the Machine to maintain the required temperature & time as test required,
b. Pre heat the canister & steel ball to set the temp, of the Machine,
c. Check the temp, by using thermometer,
d. Pour the container with the detergent,
e. Place the sample with adacent fabric,
f. Clamp on the cover & fasten the canister vertically into the color of the Machine,
g. Start the Machine,
h. Stop theMachine when the buzzer on after
i. completion of the test, i. Remove the sample from the can, wash properly & dry it.

10. Fastness to water:

- Machine used: Perspirometer chemical kit &carbolite incubator.
- Person responsible: Lab assistant.
- Fabric size: 10cm x 4 cm
- Temperature: 37°C
- Time:4hrs.
- Chemical: No chemical used.

11. Fastness to perspiration:

- Machine used: Perspirometer chemical kit &carbolite incubator.
- Person responsible: Lab assistant.
- Frequency: Whenever required.

- Fabric size: 10cm x 4 cm
- Temperature: 37°C
- Time:4hrs.
- Chemical: Acid, Alkali

12. Fastness to rubbing:

- Machine used: Crock meter.
- Manufacturer: James H. Heal & company, Halifax, England.
- Person responsible: Lab assistant.
- Procedure : Take sample fabric , mount it on bed of crockmeter, take another white bleached sample of 5cm*5cm and mount it on the finger of crockmeter and rub it against sample fabric for 10 seconds and 10 cycles
- Remove the specimen and take a wet sample and rub it against the fabric sample following above procedure
- Compare two sample using grey scale

3.2.5.7. **Machines Used in QC department:**

1. Titan universal strength tester
2. Elmatear Digital Tear Tester
3. Nu Martindalo Abrasion & Pilling tester
4. Whirpoolaccuwashwashung machine
5. WhirpoolAccudry Drying machine
6. pH meter

3.2.6. **Inspection**

The major function of inspection department is to find out faults in fabric and their possible remedies.

In Hamid Fabrics Ltd fabric is inspected as both grey and finished.

3.2.6.1. Types of inspection:

1. Grey inspection,
2. Final inspection

1. Grey inspection

Inspection & grading of fabric quality is one of the important functions of quality control is the grey or finished state. The grading of fabric is difficult task, taking two primary considerations: as the frequency of effects & the seriousness of defects.

Grading has two primary functions: 1st to classify fabrics according to standard qualities based on the end use & customer demands & 2nd is to supply information as to the qualities actually being produced.

2. Final Inspection

- All pieces will be graded on the base of 4 points per 100 linear yards mapping will be done on each piece to ensure proper grading. Do not count more than 4 points per one yard.
- All defects must be recorded & marked in final inspection & an accurate account of points made to ensure proper grading,
- All fabrics must meet specifications,
- At the end of each piece of fabric, the inspector will add up total points & decide whether the piece can be shipped as first quality or not, reworked , placed in lower quality, or cut & upgraded for shipment. Fifteen yards or more can be shipped as first quality,
- Quality control supervisor must approve the grading of all quality levels & check the lower quality,
- Major or unsightly defects in the first & last yard of a roll or piece will be cut. All defects of one yard length or more will be cut of the piece. Defects within the first 2 inches or the last 2 inches of a piece will not be cut out or counted in the grading,
- Open defects on the back of fabric such as drops, runs & hanging picks are to be included in the grading of the fabric,
- Pieces can be connected together, once each piece must be the same shade,
- All defects such as runs that extend more than a yard in length will be cut out.

Fig: Inspection Machine

3.2.6.2. Major fabric faults:

1. Crease mark
2. Miss pick
3. Shade variation
4. Stop mark
5. Foreign yarn
6. Mixed yarn
7. Thick/thin yarn
8. Knot
9. Line mark
10. Broken yarn
11. Slub
12. Drops mark
13. Dye stain
14. Dye resist
15. Oil spot
16. Hole

3.2.6.3. Inspection of Fabric by 4-point system:

Inspection of Fabric is a procedure by which the defects of fabrics are identified & fabrics are classified according to degree or intensity of defects. In Hamid Fabrics Ltd. fabric inspection is done by 4-point inspection system. The details of it is given below-----

Fault	Point
Band/ starting mark/shade bar	4-point
Lost end	4-point
Oil spots	1. Up to 5 mm dia = 1point 2. Up to 10 mm dia = 2 point 3. More than 10 mm dia = 4point
Slabs	1point
Embedded fly	4-point
Max. penalty point for any running yds(36" × fabric width)	4-point
All hole	1-4-point(according to fault size)
Faults in both warp & weft receive equal points	1-4-point(according to fault size)
Missing pick/double pick	1. Up to 0.05" = 1 point 2. Over 0.50" = 2 point
Yarn contamination according to the size	1point
Knot	1point
Neps	1. Fabric dark crease may be rejected, 2. Light crease may be considered
Crease mark	1. Up to 5 mm dia = 1point 2. Up to 10 mm dia = 2 point 3. More than 10 mm dia = 4point
Water drops	1. Up to 5 mm dia = 1point 2. Up to 10 mm dia = 2 point 3. More than 10 mm dia = 4point
Dye resist	1. Up to 5 mm dia = 1point 2. Up to 10 mm dia = 2 point 3. More than 10 mm dia = 4point
Dye stain	1. Up to 5 mm dia = 1point 2. Up to 10 mm dia = 2 point 3. More than 10 mm dia = 4point
Dirty mark	1. Up to 5 mm dia = 1point 2. Up to 10 mm dia = 2 point 3. More than 10 mm dia = 4point

Note for 4-point system:

1"-3" = 1 point

3"-6" = 2 point

6”-9” = 3 point
More than 9” = 4 point

$$\textbf{Points per 100 sq. yards} = \frac{\textbf{Total points} \times 100 \times 36}{\textbf{Total length in yards} \times \textbf{useable width in inch}}$$

3.2.6.4. Fabric flagging with sticker:

- Large 6 point major fault in either warp & weft should be fagged with arrow marked sticker in the right hand side of the fabric,
- Holes, stains & soils should be flagged,
- Flags should be clearly visible when fabric is spread face up or face down,
- Flags should not be detached from the fabric during transportation & handling by any means.

3.3. Maintenance

Machine, buildings & other facilities are subjected to deterioration due to their use & exposure to environmental condition process of deterioration. If unchecked, culminates in rendering these service facilities unserviceable & brings them to a standstill. In industry, therefore has no choice but to attend them from time to time repair & recondition them so as to elongate their life to extend. It is economically & physically possible to do so.

3.3.1. Objectives:

- To keep the factory plants, equipments, machine tools in an optimum working condition,
- To ensure specified accuracy to products & time schedules of delivery to customer,
- To keep the production cycle within the stipulated range,
- To modify the machine tools to meet the need for production.

3.3.2. Types of maintenance:

Preventive maintenance:
It is a predetermined routine actively to ensure on time inspection/checking of facilities to uncover conditions that may lead to production break downs or harmful description.

Break down maintenance:
In this case, repairs are made after the equipment is out of order & it cannot perform its normal functions.

Routine maintenance:
Maintenance of different machines are prepared by expert engineer of maintenance department. Normally in case of dyeing machines maintenance after 30 days complete checking of different important parts are done.

3.3.3. Duties of Mechanical maintenance department :

1. Complete cleaning of m/c
2. Cleaning of drain valves, replace seals if require
3. Check air supply filters, regulators auto drain seals
4. Clean filters element & blow out
5. Greasing of unloading roller bearing
6. Checking of oil level & bolts of unloading roller gearbox
7. Checking of unloading roller coupling & packing
8. Checking & cleaning of main vessel level indicator
9. Checking & cleaning of main vessel level indicator
10. Check the function of heat & cool modulation valves
11. Check all door seals

3.3.4. Duties of Electrical maintenance department:

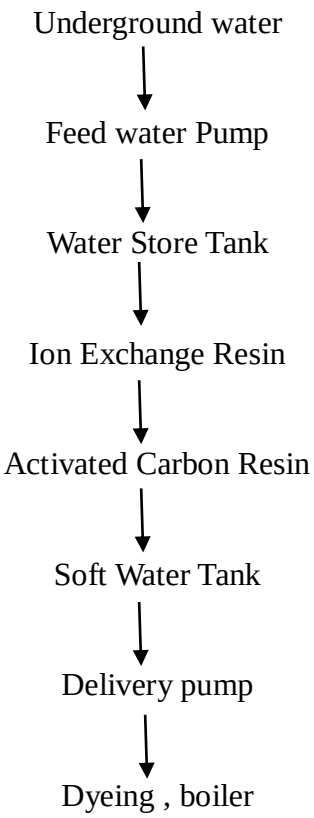
1. Check & clean fluff &dirt from all motor fan covers
2. Check all motor's terminals
3. Check panel cooling fan & clean its filter
4. Check main pump inverter & its cooling fan
5. Check all circuit breaker, magnetic conductors & relays
6. Check current setting of all circuit breaker & motor over load
7. Visual checking of all power & control cables
8. Check all pressure switches
9. Check calibration of main vessel & all addition tanks
10. Check calibration of heating/cooling modulation value
11. Check all emergency switches
12. Check all on/off switches
13. Check all indication lamps

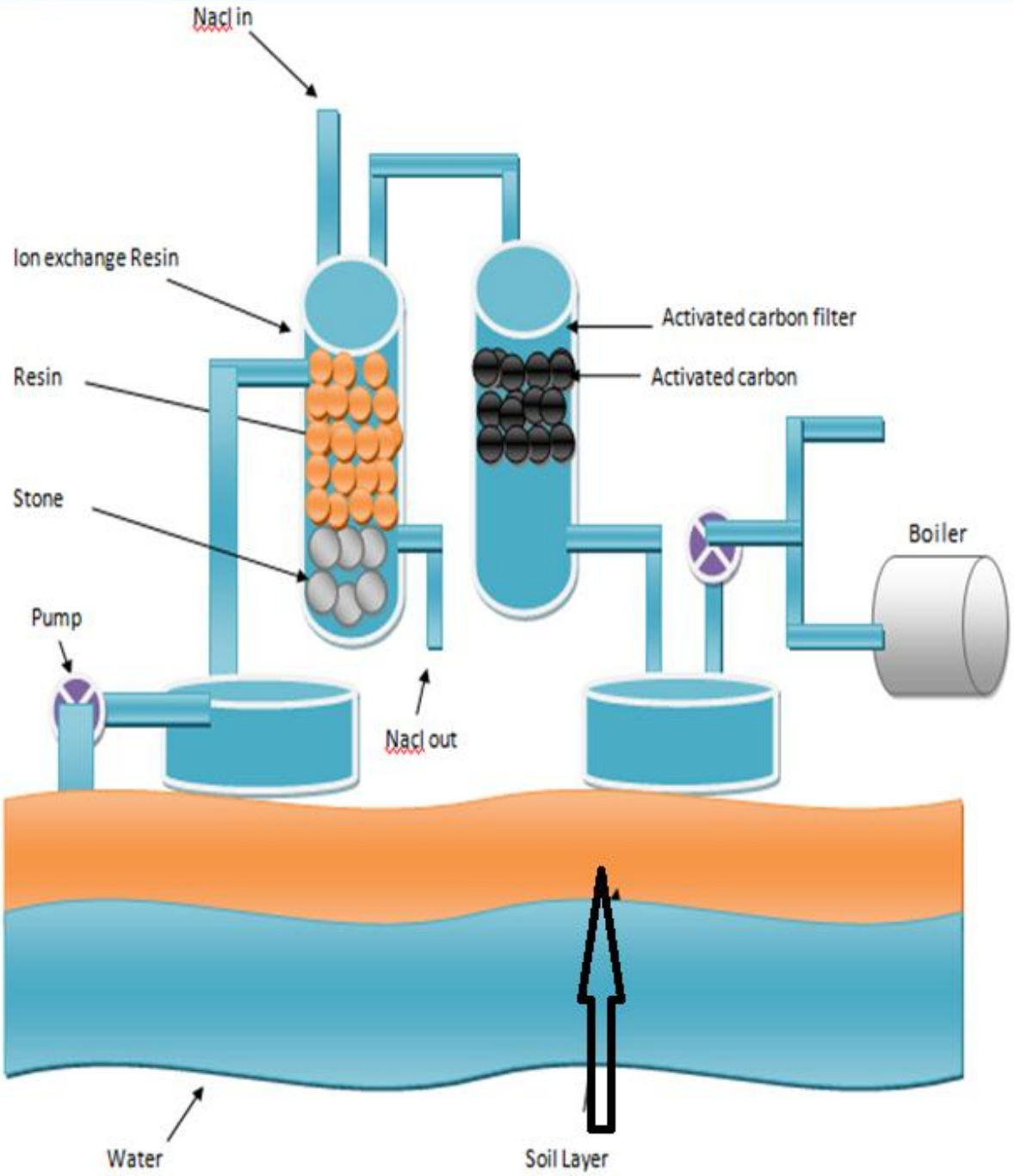
3.4. Water Treatment Plant :

Water is a vital element of our environment. It is widely considered as the main force that keeps creatures alive in the earth. It is a must for any living thing. According to definition Water is a transparent fluid which forms the world's stream, lakes, oceans and rain, and is the major constituent of the fluids of living things. Water is also extensively used in manufacturing plants and different industries as the major resource. In textile wet processing water is the main resource for all the operation. But naturally this water contains many unwanted things popularly termed as impurities. Water contains many impurities among them most attention drawers are hardness, microorganisms, bacteria, virus, sediments, dissolved gases, dissolved salts, suspended solids , odor, arsenic , iron , copper , turbidity etc. Among these impurities hardness is our main headache as it directly effect on dyeing and finishing result. Hardness is an impurity by the virtue of which water contains metal ions which later react with dye, chemicals used in pre treatment, dyeing and finishing and alter predefined result.Thus hardness attributes to faulty dyeing, variation of dyeing shade, improper pretreatment, and insufficient pre treatment.

Therefore water must be softened before using in textile dyeing and finishing. For this reason we need water treatment plant that will make water soft enough to be used in industry.

3.4.1. Process Flowchart




Nacl in
Ion exchange Resin
Resin
Stone
Pump
Nacl out
Activated carbon filter
Activated carbon
Boiler
Water
Soil Layer

3.4.2. Main Functional Parts

1. Suction Pipe : It penetrates through earth surface and draws water from underground
2. Suction Pump : It uses motor and air pressure to suck water
3. Hard water tank : Here hard water is stored for formal use and emergency
4. Ion –exchange Resin: Here main softening is done . Here ions of resin are exchanged with metal ions of hard water and thus water is purified
5. Outlet pipe : Through this pipe water is exhausted
6. Activated Carbon filter : Here additional impurities such as dirt is removed
7. Soft Water Tank : Here soft water is stored and then supplied to boiler and dyeing industry

3.4.3. Working Procedure

1. At first water is sucked from underground by suction pump
2. Then water is stored in a water tank
3. Then water enters in a sand and stone filter and purified from dirt dust and sediments and un dissolved solid
4. Then water enters in a set of ion exchange resins where hard water is purified by exchanging its metal ions like calcium ions and magnesium ions with sodium ions of ion exchange resin where following reaction occurs

Temporary hardness

$$Ca(HO3)2 + Na2OZ = CaO.Z + 2NaHCO3$$
$$Mg(HO3)2 + Na2OZ = MgO.Z + 2NaHCO3$$

Permanent hardness

$$CaSO4 + Na2OZ = CaO.Z + Na2SO4$$
$$MgSO4 + Na2OZ = MgO.Z + Na2SO4$$

Where Z = Al2O3.SiO2.H2O

In this tank after every 15 minutes around 3002kgs of salt is added to regenerate the resin by following reaction

CaO.Z +2NaCl =Na2O.Z +CaCl2

5. Then water enters activated carbon resin where water is further purified
6. Then water is kept on a soft water tank
7. From this soft water tank water is pumped to supply the water to boiler and dye house

3.4.4. Water quality

Parameter	before softening	after softening
PH	7.5-8	6.9-7.2
Hadrness	200 PPM	5 PPM

3.4.5. Water Hardness test :

Required water= 100 ml.
Buffer solution= 2-3 drops.
Indicator (ErichromeBalck T) =1-2 drop.
EDTA Solution=required drops.

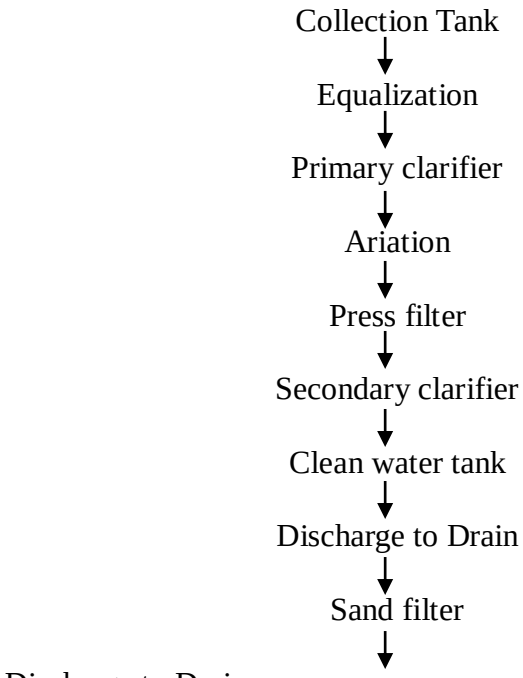
Procedure:

I. At first we take 100ml water which needs to be test.
II. Then we take 2-3 drops of buffer solution on to the water.
III. Then we take 1-2 drop of indicator in water.
IV. Then the water turned in to red color.
V. Then we add EDTA solution into water.
VI. The amount of EDTA required to make the water blue is multiplied by 300.
VII. The amount will be the hardness.

3.5. Effluent Treatment Plant :

Industries throw out waste liquor into rivers, canals etc. Before flowing this liquid to outwards, the plant which treats this effluent to a harmless form for the environment is known as Effluent Treatment Plant (ETP).

3.5.1. Process flowchart of ETP



1. Collection Tank: Commencing part, waste from different section enter here.

2. Equalization:

3.Primary clarifier: Here lime is added to waste water which remove impurities and make water white. FeSO4 is also used which removes dirt, dust and create slush . Slush is later suspended below by polymer. The clarifier separates the treated slurry from clean water. The sludge settles down and cleans water at the top flows down to the cooling tower from where it is cooled and recycled.

4. Ariation: Here waste water which is of high pH is neutralized by adding acid

5.Press filter: It collects slush from treated water which is later collected in solid form. Sludge from the sludge tank will be pumped to the Filter Press equipments for dewatering purpose. The filter elements are constructed of lightweight polypropylene. They are extremely corrosion resistant and virtually eliminate plate breakage.

6.Secondary clarifier: Then water goes into secondary clarifier for further treatment.It is a clarifier in which the suspended organisms are separated from the treated effluent by settling. The settled organisms are pumped back to the second tank to keep them in the system.

7.Sand filter: Then water enters into a sand filter. Filtration layer consists of sand rock which filter wet sludge to extract water rest in it.

8. Discharge to Drain: Then treated waste water is discharged to drain and from there to river or cannel.

3.5.2. Water quality

pH: 6.9-7
D.O: 5.9

3.5.3. Chemicals used:

FeSO4 = 150kg after every 3 hours
Lime = 40kg after every 1 hour
Polymer = 600g after every 3 hours
D. Polymer = 500g after every 24 hours
Acid: 300kg when pH is increased

Chapter -4 : Impact Of Internship

Industrial training is an integral part of our education in textile engineering. It helps us to know about the process performed in an industry. It makes us strong enough to perform our duties in job properly. It also help us to develop our skill through different activities.

In this training at Hamid Fabrics Ltd I have gained following things:

In Dyeing Lab & QC :

1. I have learned about process sequence followed in laboratory
2. I have learned about labdip and its development process
3. I have learned to calculate dyeing recipe
4. I have learned about the different test methods performed

In Pre-treatment:

1. I have learned about functions of different chemicals and their application
2. I have leaned about the pre-treatment faults and remedies
3. I have learned about the machines used in pre-treatment

In dyeing floor:

1. I have learned about the dyeing methods
2. I have learned about the production calculation
3. I have gained knowledge about process sequence

In Finishing : I have learned about industrial procedure of different textile finishing

In inspection : I have learned about different faults and their rectifications

Beside above this I have also gained following things

1. It helped me to become skilled in conducting different process of textile wet processing

2. I have learned about the procedures that an industry follows from start to end of production

3. I have gained knowledge about maintenance system and techniques followed in an industry

4. I have learned about the techniques used to get efficient production

5. I have become experienced about the industrial application of different dyeing processes

6. Industrial training helped me to know about the responsibility of a textile engineer in industries

7. It also helped me to develop a good communication skill

8. I have learned the different tricks used for manpower management

9. I have learned the duties of finance department

10. I also learned the activities of administration department

11. I have visited different section of the company and learned about the inter relationship among them

12. I have gained knowledge about the responsibilities of different employees

Chapter - 5 : Conclusion

In textile education practical knowledge is often more important than theoretical knowledge. Theoretical background is not sufficient so, industrial training is an essential part of study to make a technologist technically sound in this field. Industrial training provides us that opportunity to gather practical knowledge.

This Industrial training increases my thought a lot about textile technology. It also helps me to know a lot about industrial production process, machineries, and industrial management and made me suitable for industrial life. It gave me the first opportunity to work in industry. So I can say industrial attachment prepare us for the expected destiny of practical life. I have completed my industrial attachment from Hamid Fabrics Ltd. I got the impression that this factory is one of the modern export oriented industry of our country. This factory does not compromise in case of quality. Hamid Fabrics Ltd is a major woven manufacturing and dyeing factory. It has the capability to offer a complete product range for the export & domestic textile markets. The goal of the textile division is to become the preferred partner for sourcing high quality fabrics & clothing from Bangladesh. With high advanced technology & an emphasis on developing local human resources, the textile division has the potential to make an important contribution to the nation's growing textile export sector. It aims to build a true marketing led enterprise with motivated workforce, innovative vision, and strong revenue based product portfolio, customer satisfaction & understanding of global market and be one of the best leading Home Textile weaving mill in Bangladesh